



Faculty/Graduate School of Health Sciences,
Hokkaido University

FHS 2025

7th

International Conference on Health Sciences



**Rethinking the Role of Health Sciences:
Navigating Global Health Issues for Inclusive Societies**

PROGRAM

Multipurpose Room in the Building E
Faculty of Health Sciences
Hokkaido University

**October 24
2025**

Welcome to the 7th FHS International Conference



Dear FHS community members,

We have the honor to hold the 7th FHS International Conference (FHS2025) organized by the Faculty of Health Sciences, Hokkaido University. Since 2013, the FHS International Conference has been held every two years.

Our past meetings have served as a platform for exchanging information and discussion in a broad variety of health-related disciplines, including nursing, radiological technology, medical laboratory science, rehabilitation medicine and health science studies. On behalf of the Executive Committee members, I would like to give the warmest welcome to all participants, especially speakers from abroad.

We are now faced with many challenges ranging from global climate change, inconceivable disasters, pandemics of emerging infectious diseases as an existential threat to humanity, conflicts and declining birth rates in aging societies. What matters most is the health and well-being of people even in such circumstances, and I believe that our mission is to find out what we can do to maintain people's health. We set the theme of the 7th FHS International Conference as "Rethinking the Role of Health Sciences: Navigating Global Health Issues for Inclusive Societies". This is our aspiration to strive together towards the future to open up a new era of health sciences by integrating our knowledge and expertise.

I hope for the success of the 7th FHS International Conference where the outcomes of fruitful discussions lead to the further development of our friendship and facilitation of collaborative research opportunities.

24th October 2025

Akihiro Ishizu, M.D., Ph.D.

A handwritten signature in black ink that reads "Akihiro Ishizu".

President of the 7th FHS International Conference
Dean of the Faculty of Health Sciences
Faculty of Health Sciences, Hokkaido University, Japan

Welcome to the 7th FHS International Conference (FHS 2025)



Dear colleagues and participants:

It is my great honor and pleasure to welcome you to the 7th FHS International Conference. This year's theme, "Rethinking the Role of Health Sciences: Navigating Global Health Issues for Inclusive Societies," invites us to consider how health sciences can help build more equitable and resilient communities in an era of global challenges.

We are delighted to host distinguished speakers joining us both onsite and online from Taiwan, Korea, Thailand, Indonesia, Australia, and Japan. This biennial event brings together colleagues from diverse disciplines who share a common vision of advancing human health and wellbeing.

Since its inception in 2013, the FHS International Conference has become a vibrant platform for collaboration across Asia and the Pacific. After celebrating our 10th anniversary in 2023, this year marks a new step toward the next decade of shared learning and innovation. We are deeply grateful to our partner institutions and all colleagues who continue to strengthen this global network.

Through this conference, we hope to re-examine the social mission of health sciences, exchange new ideas, and inspire the next generation of researchers to address emerging global health issues with creativity and compassion.

I extend my heartfelt appreciation to all presenters, participants, and the dedicated members of the International Affairs Office for their efforts in organizing this event. Let us take this opportunity to reconnect and envision together—the next decade of inclusive and transformative health sciences.

Thank you for joining us.

24th October 2025

Taro Yamauchi, Ph.D.

A handwritten signature in black ink that reads "Taro Yamauchi". The signature is written in a cursive, flowing style.

Chair of the Organizing Committee of the 7th FHS Conference
Director of the International Affairs Office
Faculty of Health Sciences, Hokkaido University, Japan

Overall Program Schedule

8:00	Registration (Grad. Students), Displaying Posters for Poster Session 1	
8:20–8:50	Registration (General)	
8:50–9:00	Opening Remarks	Prof. Akihiro Ishizu Dean, Faculty of Health Sciences, Hokkaido University, Japan
9:00–10:20	Symposium 1	Chair: Prof. Takako Chikenji 9:00–9:20 1. Prof. Ju Hee Kim <i>Risk assessment of infant exposure to EDCs, PFAS, and Heavy metals through breastfeeding</i> College of Nursing Science, Kyung Hee University, Korea 9:20–9:40 2. Dr. Yoshiko H. Kondo <i>From Science to Care: Aligning Technical Literacy and Ethics in Reproductive Health</i> Faculty of Health Sciences, Hokkaido University, Japan 9:40–10:00 3. Dr. Chag-Chih Robin Kuo <i>Systematic application of Lifestyle Redesign Program in Taiwan: Series of Lifestyle Modification Program</i> College of Health Sciences, Kaohsiung Medical University, Taiwan 10:00–10:20 4. Dr. Maki Miyajima <i>Cellular Senescence in Autism Spectrum Disorder: A Pathological Feature and Potential Therapeutic Target</i> Faculty of Health Sciences, Hokkaido University, Japan
10:20–10:40	Tea Break	
10:40–12:10	Poster Session 1	
12:10–13:20	Lunch, Displaying Posters for Poster Session 2	
13:20–14:20	Symposium 2	Chair: Dr. Michito Murayama 13:20–13:40 5. Prof. Shwu-Jen Liaw <i>A copper detoxification system in uropathogenic <i>Proteus mirabilis</i></i> College of Medicine, National Taiwan University, Taiwan

13:20–14:20	Symposium 2	13:40–14:00 6. Dr. Hiroyuki Takashima <i>For Extending Healthy Life Expectancy</i> Faculty of Health Sciences, Hokkaido University, Japan 14:00–14:20 7. Dr. Sararas Khongwirotphan <i>Artificial Intelligence in Radiology: Current Applications</i> Faculty of Allied Health Sciences, Chulalongkorn University, Thailand
14:20–14:40	Break	
14:40–16:10	Poster Session 2	
16:10–16:30	Tea Break	
16:30–17:30	Symposium 3	Chair: Prof. Taro Yamauchi 16:30–16:50 8. Dr. Mahmud Aditya Rifqi <i>Integrated Approach of Nutrition and WASH to Tackle Malnutrition Issues in Urban Slums</i> Faculty of Public Health, University of Airlangga, Indonesia 16:50–17:10 9. Dr. Rahel Mesfin Ketema <i>Environmental chemical Exposure: Addressing Risks in Vulnerable population for Global Health</i> Faculty of Health Sciences, Hokkaido University, Japan 16:50–17:10 10. Prof. Richard Chenhall <i>Living the commercial determinants of health: A remote Indigenous Australian experience</i> Faculty of Medicine, Dentistry and Health Sciences, the University of Melbourne, Australia
17:30–17:40	Closing Remarks	Prof. Taro Yamauchi Chair, International Affairs Office, Faculty of Health Sciences, Hokkaido University, Japan
18:30–20:00	Social Gathering and Award Ceremony	

Poster Session 1

No.	First Author	Title
1-01	Ryuto Matsuura	The effect of light touch on limits of stability and postural stability during lateral weight transfer
1-02	Rimi Furudate	The Effects of Transcranial Direct Current Stimulation on Working Memory Training in Patients with Depression: A Systematic Review and Meta-Analysis
1-03	Manaka Tsunemoto	Effects of different type of visual feedback on mediolateral postural sway
1-04	Hana Takamura	Exercise Preconditioning Modulates Reactive Astrocyte Response After Intracerebral Hemorrhage in Mice
1-05	Yuji Ogihara	Effects of Transcranial Direct Current Stimulation over bilateral Ventrolateral Prefrontal Cortex on stimulus-induced emotion regulation
1-06	Miyu Ishii	Effectiveness of a multifaceted intervention program for community-dwelling older drivers
1-07	Honoka Sato	Modeling the Structural Organization of Attention in Acquired Brain Injury: A Path Analysis Approach
1-08	Yuan Ding	Effects of Schwann Cell Transplantation on Functional Recovery after Intracerebral Hemorrhage
1-09	Sana Ashida	Mental Health Status of undergraduate Athletes During Competition Periods
1-10	Yuta Nojiri	Injury Patterns and Snow Conditions Among Japanese High School and University Alpine Ski Racers: A Comparative Study
1-11	Riko Mioka	Exploring Occupational Therapists' Experiences of Collaboration with Teachers in Schools: A Qualitative Study
1-12	Maho Yamazaki	Cultural Humility in Interactions within Occupational Therapy: A Literature Review
1-13	Ayaka Nagao	Depression involves downregulation of cellular senescence-associated genes and alteration of intercellular communication
1-14	Dain Kasseki	Characterization of Exercise-Induced Responses in Firo/Adipogenic Progenitors of Diabetic Skeletal Muscle
1-15	Miku Nakatsuka	Three-Dimensional Analysis of Functional Joint Angles in Seated Basic Activities of Daily Living
1-16	Miyu Yokouchi	Identification of mechanotransduction-related genes in senescent cells using RNA-seq analysis
1-17	Katsunori Ohta	Senescent cells contribute to arthritis flares in rheumatoid arthritis
1-18	Naoya Aramoto	Relationship between upper limb ataxia and trunk stability in post-stroke patients with cerebellar ataxia
1-19	Taichi Sonobe	Comparison of The Elbow Valgus Stability at Different Elbow Flexion Angles
1-20	Mahiro Kuwabara	Differences in Achilles Tendon Loading and Ground Reaction Forces Across Various Stepping Motions in Kendo
1-21	Hayato Hashimoto	Relationship between quadriceps force control and knee flexion angle during single-leg landing
1-22	Saya Hiraki	Sex-Specific Impact of Glucose Metabolism on the Predictive Accuracy of a Radiation-Induced Lymphopenia Model in Glioblastoma Patients

1-23	Wataru Kakizaki	A Fundamental Study of a Knee Joint Space Extraction Method from MRI using Deep Learning
1-24	Satomi Monde	Study on the effect of dietary antioxidants on lipid droplets (LDs) and oxidized LDs accumulation in hepatocytes
1-25	Aoi Asano	Characterization of postural control during voluntary weight shift in developing children
1-26	Xinran Liu	Establishment of a Quantitative Analytical Method for Cardiolipin Determination
1-28	Tsubasa Tatsumiya	The role of mitochondria in the cellular adaptation mechanism of <i>Chlamydia trachomatis</i> (L2/434/Bu)
1-29	Seigo Sometani	Lipid Profiling and Detection of Rare Ceramides in Seafood Roe
1-30	Taiki Deguchi	Localization of pAkt(Ser473) accumulating at the inclusion membrane of <i>Chlamydia trachomatis</i> (L2/434/Bu) : pAkt accumulates at the microdomain of the inclusion membrane
1-31	Riku Kawahashi	The Relationship between Screen Time and Sleep Problems in Adolescents : The Hokkaido study
1-32	Yurina Kameya	Perceptions and Barriers of Menstrual Health and Hygiene in School and Home Settings in Yaoundé, Cameroon
1-33	Naoki Ogawa	Investigation of Facial Expression Discrimination Strategies in Individuals with ADHD Tendencies
1-34	Md Abdul Malek	Lipid composition analysis of Hokkaido grape varieties and their effects on wine quality development by nontargeted LC/MS
1-35	Kumari Suraksha	Lipid profiling of dietary millets utilizing nontargeted liquid chromatography/mass spectrometry
1-36	Rachana M. Gangadhara	Lipidomic Insights into the Effects of Obesogenic Diet and Exercise in Mice Using Untargeted LC-MS
1-37	Sahana Amai	Comparative Lipidomic Study of Japanese Edible Sea Urchins: Insights into Their Nutritional Value
1-38	Punith M. Sundaraswamy	Identification of 9Z-Docosenoic Acid from <i>Hizikia fusiformis</i> as a Natural Inhibitor of Sphingomyelin Synthase
1-39	Suishin Arai	Neutrophil extracellular traps induced by anti-phosphatidylserine/ prothrombin antibodies promote platelet activation and contribute to thrombosis in antiphospholipid syndrome
1-40	Airi Onoda	Physiological mechanism of pulsatility of portal venous flow in healthy adults
1-41	Hinako Notoh	Neo-bone marrow generation <i>in vivo</i> by subcutaneous transplantation of matured cartilage-organoid
1-42	Hodaka Ogawa	Methylprednisolone pulse induces neutrophil extracellular trap formation in a lupus-like murine model, resulting in ischemia of the femoral head cartilage
1-43	Naho Ogawa	The development of osteonecrosis of the femoral head following methylprednisolone pulse in hyperlipidemic lupus mice
1-44	Nao Inoue	Abnormal lysophosphatidylethanolamine metabolism in the kidney and plasma of a murine type 2 diabetes model
1-45	Nanao Murakami	Identification of cholesteryl ester species effluxed by apoA1 from macrophages

Poster Session 2

No.	First Author	Title
2-01	Hinako Kawarasaki	Assessing Tools for Heavy Menstrual Bleeding: Toward the Development of a Japanese Version of Self-Assessment Scale
2-02	Mio Fujise	Influence of Clinical Practicum–Induced Stress and Associated Lifestyle Alterations on Premenstrual Syndrome Symptoms in Undergraduate Nursing Students
2-03	Ayano Suzuki	The experiences of pregnant women in rural areas requiring long-distance travel to perinatal care : A scoping review
2-04	Junna Honda	Impact of Menstrual Symptoms on Academic Performance Among Female University Students: A Literature Review
2-05	Yoko Kano	Experiences of patients with head and neck cancer who received curative (chemo)radiotherapy: A literature review
2-06	Yui Kamiya	Adverse experiences and unmet needs of informal caregivers of patients with heart failure in daily living: A literature review
2-07	Ziqi Geng	Psychological Care for Postoperative Patients with Ectopic Pregnancy: A Meta-Analysis of Its Effects on Anxiety and Depressive Symptoms
2-09	Nakyoung Kim	Impact of LDL Oxidation on Lipid Accumulation and PCSK9 Suppression
2-10	China Washio	Targeting IL-21: a novel therapeutic strategy for ANCA-associated vasculitis
2-11	Yuta Tateishi	Echocardiographic Estimation of Right Ventricular Stroke Work Index Based on Pulmonary Regurgitant Velocity in Heart Failure with Reduced Ejection Fraction
2-12	Hiyori Miyatake	Mechanism of neutrophil extracellular trap formation induced by saliva
2-13	Koki Takai	Nucleosomes as markers of neutrophil extracellular trap formation
2-14	Ruo Takeda	Why Obligate Symbiosis Occurs: A Model of <i>Acanthamoeba-Neochlamydia</i> S13 Association
2-15	Rikuto Nara	The cellular characterization of CLEC-2 positive long-term hematopoietic stem cells
2-16	Yuzu Shibata	A novel approach for screening indirect antioxidants for preventing oxidized lipid droplet formation
2-17	Kota Yanagimoto	Impact of outpatient cardiac rehabilitation on left atrial reservoir function in early HFpEF
2-18	Rina Muto	Optimal Cutoff Value of Pulmonary Regurgitation Velocity According to the New Definition of Pulmonary Hypertension
2-19	Kisara Yuki	Establishment of a sustained hypoxic experimental system mimicking human body and the intracellular dynamics of <i>Chlamydia trachomatis</i> within it
2-21	Kami Kimura	Mechanisms of Progression in Ventricular Secondary Tricuspid Regurgitation
2-22	Himeno Sakuma	Inhibitory effect of DHMBA on cholesterol synthesis
2-23	Soyoka Ujiie	Characterization of CL, MLCL, and DLCL in tafazzin-knockout HepG2 cells
2-24	Moe Wadayama	Estimation of right atrial pressure based on the changes in superior vena cava flow pattern in response to postural change

2-25	Yuino Sasaki	Induction of lipid peroxidation by double-oxidized apoA-1 peptide in fatty liver model cells
2-26	Moe Rokuto	Can human skin-temperature warming of dry surfaces universally reduce bacterial counts? Construction of a Multi-Sample Concurrent Evaluation Method and Effective Range.
2-27	Marin Sakamoto	Performance Evaluation of Object Detection Models in Surgical Video Analysis: A Preliminary Study on Multi-Faceted Metrics Beyond Average Precision
2-28	Wei Wei	A Quantitative Baseline for Fingertip-Accurate Hand Pose Estimation Using HRNet
2-29	Sora Takagi	Interpretable dosiomic analysis for predicting normal tissue complications in head and neck cancer radiotherapy
2-30	Riria Yamamoto	Fundamental Investigation of Deep Learning for Automated Detection of Pelvic Fractures on CT
2-31	Yuta Fujisawa	Preliminary Study on Reducing Uncertainty in Dose Accumulation for Adaptive Radiotherapy: Toward Personalized Cancer Treatment
2-32	Airi Nukushina	Evaluation of the Expiratory Phase CBCT for Pancreatic SBRT using Edge Response Width
2-33	Pitsanu Khamnuan	Indoor Airborne Microplastics, Nasal Microplastic Levels, and Respiratory Health among Healthcare Workers in Thailand: A Research Protocol
2-34	Takaya Maeyama	Characteristics of eye movements and correlation to cognitive functions in relation to the location of guide signs and driving speed
2-35	Yushan Liu	Transplantation of mesenchymal stem cell and therapeutic exercise promote the recovery of motor function after intracerebral hemorrhage
2-36	Masaaki Sugi	Key neuropsychological tests for predicting employment outcomes in persons with cognitive impairment after moderate to severe traumatic brain injury
2-37	Akihiro Watanabe	Transcranial direct current stimulation to the left dorsolateral prefrontal cortex enhances early motor learning in a non-dominant hand drawing task: A randomized controlled trial
2-38	Hiroshi Miura	Elucidating the role of right dorsolateral prefrontal cortex in cognitive-motor interference: Polarity-specific effects of tDCS
2-39	Yusuke Minami	Difference in health functional lipids between Shishamo and Capelin (Karafuto-Shishamo)
2-40	Hinata Okuno	Overuse Injuries in Adolescent Male Soccer Players: A Prospective Study
2-41	Rika Hirayama	Exploring the Meaning of Building a Men's Shed: A Case Study from a Longitudinal Intervention Project
2-42	Minori Tanaka	The relationship between obesity and sit-to-stand performance in women aged 50 and older
2-43	Jessy Zgambo	Sociodemographic disparities in water, sanitation, and hygiene access and diarrhoea prevalence in peri-urban communities of Kafue, Lusaka, Zambia
2-44	Md. Nahid Uz Zaman	Gender-Inclusive Education for Menstrual Health and Hygiene among Nursing Students in Bangladesh: A Mixed-Methods Study
2-45	Joy Sambo	Menstrual Health and Hygiene Challenges in Product Access and Waste Disposal among Adolescent Schoolgirls in Lusaka, Zambia.

Symposium 1

Risk assessment of infant exposure to EDCs, PFAS, and Heavy metals through breastfeeding



Ju Hee Kim, Ph.D.

College of Nursing Science, Kyung Hee University

Ju Hee Kim, PhD, is a public health and nursing scholar at Kyung Hee University. Her research focuses on exposure assessment of environmental chemicals in pregnant women and infants, examining their impacts on infant growth, neurodevelopment, and maternal perinatal depression.

Abstract

Background: Breast milk is a critical source of nutrition for infants but also a potential pathway for exposure to environmental contaminants. Endocrine-disrupting chemicals (EDCs), per- and polyfluoroalkyl substances (PFAS), and heavy metals have been increasingly detected in human milk, raising concerns about infant health risks.

Objectives: This study aimed to assess regional and temporal variations in the concentrations of EDCs, PFAS, and heavy metals in breast milk, estimate infant daily intake (EDI) through breastfeeding, and evaluate potential exceedances of international tolerable daily intake (TDI) values.

Methods: Breast milk samples and maternal–infant information were obtained from the EPIC cohort. For EDI calculations, trained nurses manually expressed breast milk samples, measured newborn body weight, and collected daily records of breast milk intake and maternal dietary consumption.

Results: Concentrations of EDCs, PFAS, and heavy metals varied across regions and time periods, reflecting both environmental changes and regulatory shifts that have driven substitution toward alternative chemicals. EDI calculations indicated that MEHP, BPA, and As exceeded international TDI values, suggesting potential health risks for breastfed infants. Higher maternal consumption of fish and processed foods (instant noodles, ice cream, canned foods) was associated with elevated concentrations of EDCs and PFAS in breast milk. In addition, frequent intake of white rice, sea salt, seaweed, pine mushrooms, and anchovy was linked to increased As concentrations.

Conclusions: These findings highlight the need for ongoing monitoring of contaminants in breast milk and targeted dietary guidance for lactating women to minimize infant exposure.

Symposium 1

From Science to Care: Aligning Technical Literacy and Ethics in Reproductive Health



Yoshiko Hashimoto Kondo, Ph.D.

Faculty of Health Sciences, Hokkaido University

Yoshiko Kondo is a midwife and nurse originally trained in molecular developmental biology, focusing on germ cell development. Her lifelong theme is reproduction, bridging scientific understanding and clinical practice. She explores science and information literacy, evidence-based medicine, and ethical communication to foster critical dialogue on applying life science to reproductive health and care.

Abstract

Emerging reproductive health technologies—such as assisted reproductive technologies (ART), preimplantation genetic testing (PGT), and prenatal diagnosis (NIPT)—are advancing rapidly, driven by life sciences. While these innovations hold great potential for improving reproductive healthcare, an asymmetry exists between the medical and life sciences fields. In the field of healthcare, new technologies are often introduced into practice under an implicit assumption of reliability, and ethical debates tend to be shaped more by emotional and value-laden concerns than by a clear grasp of technical mechanisms or limitations. By contrast, the life sciences emphasize discovery and technical advancement, yet engagement with broader societal and ethical implications remains limited. Thus we explored how future professionals in health sciences and life sciences understand these technologies and how their understanding shapes ethical decision-making. Using a mixed-methods approach, we surveyed and interviewed students preparing for careers in healthcare or life science research. The questionnaire assessed technical understanding and ethical attitudes; interviews examined decision-making processes, perceptions of risk, and views on societal responsibility. The study aimed to capture both measurable levels of technical literacy and the reasoning students use when confronting ethically complex situations. Findings revealed significant gaps in understanding across both groups, especially regarding the limitations and uncertainties of these technologies. Students with higher technical literacy showed more nuanced and conditional ethical reasoning. These results highlight the need for interdisciplinary education integrating technical literacy with ethical discourse to foster socially responsive, inclusive, and equitable reproductive healthcare.

Symposium 1

Systematic application of Lifestyle Redesign Program in Taiwan: Series of Lifestyle Modification Program



Chang-Chih Robin Kuo, Ph.D.

Department of Occupational Therapy,
Kaohsiung Medical University

Dr. Chang-Chih Robin Kuo, who earned his PhD in Occupational Science from the University of Southern California, conducts research that centers on the development of Lifestyle Modification programs tailored to the needs of diverse populations, alongside the exploration of innovative pedagogical strategies to advance educational practice.

Abstract

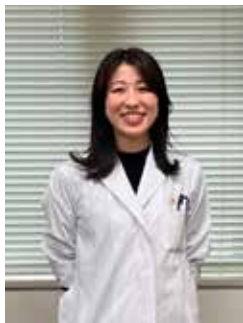
Engagement in meaningful occupational activities is known to enhance quality of life. Originating at the University of Southern California, the Lifestyle Redesign Program® (LR®) promotes health by enabling individuals to choose, perform and orchestrate meaningful daily activities. Drawing on this model, Dr. Kuo developed the Lifestyle Modification Program (LMP) to address the needs of Taiwan's rapidly aging population.

Over the past decade, a series of LMP and the Taiwan Meaningful Activity Participation Assessment (T-MAPA) have been implemented in senior learning camps at Kaohsiung Medical University and in various local communities, demonstrating positive outcomes among older adults. With support from the Ministry of Education, Dr. Kuo also launched three LMP-related massive open online courses (MOOCs), reaching over 300,000 views. In addition, Ministry of Health and Welfare funding enabled the training of occupational therapists to deliver the LMP within the Long-Term Care 2.0 system, facilitating its dissemination across Taiwan.

Furthermore, Dr. Kuo's integration of LMP MOOCs into university teaching has further enhanced student engagement and learning outcomes. These efforts have received sustained governmental support and culminated in the receipt of a national award.

Symposium 1

Cellular Senescence in Autism Spectrum Disorder: A Pathological Feature and Potential Therapeutic Target



Maki Miyajima, Ph.D.

Faculty of health sciences, Hokkaido University

Maki Miyajima is a certified occupational therapist with doctoral degrees: PhD in Health Science. Her current research focuses on elucidating the pathophysiology of autism spectrum disorder and developing therapeutic approaches, with an emphasis on molecular biological perspectives.

Abstract

Autism spectrum disorder (ASD) is a prevalent neurodevelopmental disorder affecting over 70 million individuals globally, with an increasing incidence. The core symptoms of ASD are characterized by challenges in social communication and the presence of restricted and repetitive behaviors. These symptoms, typically emerging in early childhood, often persist throughout an individual's life and significantly impair daily functioning. Developmental transitions across life stages can further complicate social adaptation, potentially leading to secondary psychiatric conditions, such as anxiety and depression. Currently, therapeutic approaches primarily consist of age-appropriate psychosocial interventions, often combined with pharmacotherapy, to manage comorbid symptoms. However, the absence of effective therapies targeting core symptoms based on their underlying pathomechanisms renders ASD a significant global health challenge. Building on this work, our laboratory recently found an accumulation of senescent cells in an ASD mouse model. This finding highlights a previously unrecognized pathological feature of ASD and suggests that cellular senescence may contribute to the onset or progression of the disorder. Furthermore, I will discuss the potential of perspective to guide the development of therapeutic strategies, including the Frontal/Executive Program (FEP), a cognitive enhancement therapy originally established for schizophrenia, aimed at ameliorating the symptoms of ASD.

Symposium 2

A copper detoxification system in uropathogenic *Proteus mirabilis*



Shwu-Jen Liaw, Ph.D.

Department of Clinical Laboratory Sciences and Medical Biotechnology, College of Medicine, National Taiwan University

I am a professor of National Taiwan University, Taipei, Taiwan. Our lab has been engaged in the study of uropathogenic *Proteus mirabilis*, investigating virulence factor expression and drug resistance. We found that bacterial two-component systems, small regulatory RNAs and sigma factors are involved in the virulence of *P. mirabilis*. Recently, we found copper homeostasis contributes to virulence of *P. mirabilis*.

Abstract

Copper, an essential trace element for all lives, is toxic when accumulated in excess. Copper is also a member of the human innate immunity. For *Proteus mirabilis*, an important uropathogen often causing catheter-associated urinary tract infections, the approaches to maintain copper homeostasis remain unclear. Using Tn5-mutagenesis, we isolated *cueO* and *cueR* mutants which exhibited more sensitive to copper than the wild-type. The *cueO* gene, encoding a periplasmic multicopper oxidase, belongs to COG category of cell division and chromosome partitioning. The *cueR* gene encodes a copper-responsive transcriptional factor. Transcriptomic analysis revealed that copper increased *cueO* expression by 11-fold. We then investigated the role of *cueO* in cell differentiation and found that *cueO* overexpression decreased swarming motility and swarmer cell length, while *cueO* mutant had increased swarming motility and cell length compared to wild-type, suggesting that *cueO* may play a role in cell differentiation in *P. mirabilis*. In addition, we found *cueO* mutant displayed decreased tolerance to oxidative stress and killing by macrophages and reduced ability to adhere and invade urothelial cells, which correspond to the lower colonization in the mouse bladder compared to the wild-type. The *cueR* deletion also resulted in a reduction of mouse colonization. We further demonstrated the copper-induced expression of *cueO* through CueR. Interestingly, we found that an aldehyde, methylglyoxal, decreased *cueR* mRNA level and uplift bacterial susceptibility to copper. In summary, a copper detoxification system made of CueO and CueR was found in *P. mirabilis*. Besides copper homeostasis, CueR and CueO also participated in virulence. To our knowledge, this is the first report disclosing the role of *P. mirabilis* copper detoxification system in virulence.

Symposium 2

For Extending Healthy Life Expectancy



Hiroyuki Takashima, Ph.D.

Faculty of Health Science, Hokkaido University

Hiro Takashima received his PhD from Sapporo Medical University Graduate School of Medicine. His current research explores advanced image analysis methods, including MRI-based biomarkers for muscle quality, mitochondrial dysfunction, and aging-related musculoskeletal diseases. He is also engaged in international collaborations to develop innovative imaging technologies that contribute to preventive healthcare and improved prognosis in elderly populations.

Abstract

Japan's rapidly aging population poses a serious challenge for healthcare systems. Although overall life expectancy has increased, the gap between life expectancy and healthy life expectancy remains significant at approximately ten years. Reducing this persistent gap is crucial not only for controlling medical and caregiving costs but also for improving quality of life among older adults. Preventive strategies and early diagnostic approaches are therefore urgently needed to promote healthy aging.

Magnetic resonance imaging (MRI) provides a powerful, non-invasive method for visualizing structural, functional, and metabolic changes in tissues. Our research focuses on musculoskeletal imaging, mitochondrial dysfunction, and tissue microenvironments, which are key contributors to age-related fragility and functional decline. By applying advanced imaging techniques, we aim to detect subtle biological changes associated with aging and gain deeper insights into its underlying mechanisms.

Ultimately, extending healthy life expectancy requires a multidisciplinary approach that integrates engineering innovation, advanced medical imaging, molecular biology, and social implementation. Through such integration, imaging-based preventive strategies have the potential to transform healthcare systems and contribute to sustainable solutions for aging societies.

Symposium 2

Artificial Intelligence in Radiology: Current Applications



Sararas Khongwirotphan, Ph.D.

Department of Radiological Technology and Medical Physics
Faculty of Allied Health Sciences, Chulalongkorn University

Sararas Khongwirotphan received her Ph.D. in Medical Physics from the Faculty of Medicine, Chulalongkorn University. Her research focuses on artificial intelligence in medical imaging, with particular expertise in tumor segmentation and radiomics-based prognosis for head and neck cancers.

Abstract

Artificial intelligence (AI) is increasingly integrated into radiology, with applications extending across different imaging modalities such as CT, MRI, and radiography. AI techniques, from machine learning to deep learning, are being applied to diverse tasks including image acquisition and reconstruction, automated detection, segmentation, classification, triage, radiomics, and workflow optimization. These tools have the potential to improve efficiency, reduce noise, enhance image quality, and support more consistent clinical decision-making. Importantly, medical images are not just pictures but structured data that can be transformed into quantitative information, opening new opportunities for predictive analytics and personalized medicine. This presentation will provide an overview of the evolution of AI in medical imaging, highlight selected examples from current research and clinical practice. Rather than replacing radiology professionals, AI should be understood as a complementary tool that can assist radiographers and radiological technologists in their work. The aim is to encourage participants to recognize both the opportunities and limitations of AI, and to consider their essential role in ensuring its safe, effective, and responsible integration into patient care.

Symposium 3

Integrated Approach of Nutrition and WASH to Tackle Malnutrition Issues in Urban Slums



Mahmud Aditya Rifqi, Ph.D.

Department of Nutrition, Faculty of Public Health,
Airlangga University

Mahmud Aditya Rifqi earned his PhD from the Graduate School of Health Sciences, Hokkaido University. His major is Community Nutrition. His research focuses on child nutrition, water, sanitation, and hygiene (WASH), as well as urban health issues related to the double burden of malnutrition in developing countries.

Abstract

Malnutrition remains a critical global health challenge, particularly in urban slum settings where rapid urbanization, overcrowding, and limited access to essential services create a complex interplay of nutritional and environmental risks. Traditional interventions often focus on dietary improvements; however, increasing evidence shows that inadequate water, sanitation, and hygiene (WASH) conditions significantly contribute to poor nutritional outcomes, especially among children. This presentation re-examines the role of health sciences in addressing malnutrition through an integrated approach that combines nutrition-specific and WASH-sensitive interventions to promote inclusive and sustainable health improvements in vulnerable urban populations. Drawing on recent research and field experiences, it highlights how unsafe water, open defecation, and poor hygiene practices perpetuate the cycle of infection, diarrhoea, and undernutrition. Case examples from low-income urban areas demonstrate that community-based hygiene promotion, access to clean water, and nutrition behaviour change programs can generate synergistic effects on child growth and overall health. The proposed Nutrition–WASH integration framework emphasizes intersectoral collaboration, community participation, and sustainable behaviour change as essential components for long-term impact. By addressing the environmental and social determinants of malnutrition, this integrated approach illustrates how health sciences can contribute to more inclusive, equitable, and resilient urban societies, ultimately supporting the global agenda for health and well-being for all.

Symposium 3

Environmental chemical Exposure: Addressing Risks in Vulnerable population for Global Health



Rahel Mesfin Ketema, Ph.D.

Center for Environmental and Health Sciences
Faculty of Health Sciences, Hokkaido University

Rahel Mesfin Ketema, Postdoctoral Fellow at Hokkaido University, specializes in environmental health, focusing on biomonitoring chemical exposures like phthalates and PFAS in children. Her research involves biomarker analysis, cohort and epidemiological studies. She contributes to academic exchange and global initiatives on chemical hazards using advanced analytical and statistical methods.

Abstract

The global rise in synthetic chemical use and plastic production has increased environmental exposure to endocrine-disrupting chemicals (EDCs). These substances interfere with hormonal systems and are linked to range of health outcomes, including developmental, reproductive, respiratory problems, and metabolic disorders. Vulnerable populations such as children are at high risks due to developing bodies and biological sensitivity.

Children are especially vulnerable during prenatal and early developmental stages, when hormonal disruption can result in long-term health consequences. This presentation will explore examining how local and global patterns of EDC use contributes to exposure and health risks. It will highlight local studies to illustrate real-world exposure and association with health effects of EDCs, while also connecting these findings to broader global health discussions.

Linking local evidence of vulnerable population and communities level data to international initiatives highlights the importance in shaping effective, sustainable response to chemical exposure will be explored. There is a growing need for data driven public strategies which contributes to ongoing global initiatives in environmental health efforts and practical interventions both at local and global levels.

Symposium 3

Living the commercial determinants of health: A remote Indigenous Australian experience



Prof. Richard Chenhall

(in association with Prof. Sandra Eades, Prof Ray Kelly, Prof Kate Senior, Dr Daphne Daniels, Ms. Angelina Joshua, Ms. Monica Bridge, Dr Alison Gibberd, Dr Tabassum Rahman and Dr Jenn Lacy-Nichols.)

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Abstract

The commercial determinants of health (CDoH) refers to the various influences and pressures exerted by industry, marketing, and economic forces on individuals' health and well-being. The CDoH in remote Indigenous communities has received little attention to date, although previous scoping reviews have pointed out relevant impacts related to food supply issues, resource extraction and environmental degradation. Remote Indigenous communities have their own ecosystems, economies and colonial histories that are important to frame when attempting to understand the CDoH. The CDoH are also deeply interconnected with the history of a community, including people's experience of being controlled and regulated by various external agencies, as well as their socio-economic circumstances. This presentation will present initial results from one of Australia first projects to document the lived experiences of the CDoH in a remote Indigenous community. The project is aligned with decolonising perspectives and approaches, with community researchers and participants leading the work with relevant Indigenous expertise.



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Rethinking the Role of Health Sciences:
Navigating Global Health Issues for Inclusive Societies**

Organizer: International Affairs Office, Faculty of Health Sciences, Hokkaido University

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